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Molecular mobility of di-2-ethylhexyl sebacate in a uniaxially oriented matrix of plasticized polyvinyl chloride

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Abstract

Uniaxial drawing of PVC plasticized with di-2-ethylhexyl sebacate suppresses the intensity of the molecular motion of plasticizer and makes this motion anisotropic. Orientation of effective rotation axes of the molecules of plasticizer results in incomplete averaging of intramolecular dipole-dipole interaction. This incomplete averaging accounts for the complex pattern of the decay of transversal nuclear magnetization and gives rise to the interplay between the rate of relaxation T2a -1 (λ, θ′) and the angle θ′ between the drawing axis and the vector of static magnetic field H0. Orientation of effective rotation axes of the molecules of plasticizer is almost complete at a draw ration λ ≈ 3.